



Research Paper

Determinants of hepatitis C antiviral effectiveness awareness among people who inject drugs in the direct-acting antiviral era



Heather Valerio^{a,b,*}, Andrew McAuley^{b,a}, Hamish Innes^{a,b}, Norah Palmateer^{a,b}, David J. Goldberg^{b,a}, Alison Munro^c, Avril Taylor^d, Sharon J. Hutchinson^{a,b}

^a School of Health and Life Sciences, Glasgow Caledonian University, Glasgow, UK

^b Blood-borne Viruses and Sexually Transmitted Infections Section, Health Protection Scotland, Glasgow, UK

^c Scottish Improvement Science Collaborating Centre, University of Dundee, Dundee, UK

^d School of Media, Culture and Society, University of the West of Scotland, Paisley, UK

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ABSTRACT

Background & aims: Although people who inject drugs (PWID) are at greatest risk of hepatitis C (HCV), treatment uptake in this population has historically been low. Highly effective direct acting antiviral (DAA) treatments for HCV have recently become available. Our aim was to assess the awareness among PWID of these new therapies and their effectiveness.

Methods: A national survey of PWID attending injecting equipment provision sites in Scotland during 2015–2016 included questions to gauge the awareness in this population of antiviral treatment and the high cure rates associated with new therapies (defined here as >80%).

Results: Among 2623 PWID, 92% had ever been tested for HCV. After excluding those ever treated for HCV (n = 226), 79% were aware of HCV treatment. Awareness was more likely among those who had ever been tested and self-reported either a positive (adjusted odds ratio: 16.04, 95%CI 10.57–24.33) or negative (3.11, 2.30–4.22) test result, compared to those who were never tested. The minority of all respondents (17%) were aware of high cure rates. This awareness was more likely among those who had ever been in HCV specialist care (9.76, 5.13–18.60) and those who had not been in specialist care but had been tested and self-reported either a positive (3.91, 2.20–7.53) or negative (2.55, 1.35–4.81) test result, compared to those who had never been tested.

Conclusion: We found poor awareness of the high cure rates associated with DAAs among PWID in Scotland, despite relatively high rates of HCV testing in this population. Increased effort is needed to ensure population groups with high risk of HCV infection are fully informed of the highly effective antiviral medications now available to treat this chronic disease.

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Introduction

People who inject drugs (PWID) are at the greatest risk of hepatitis C virus (HCV) infection. Globally, there are an estimated 15.6 million (range: 10.2–23.7) individuals currently injecting drugs of whom 52.3% (42.4–62.1%) have ever been infected with HCV (Degenhardt et al., 2017). If left untreated, HCV can lead to severe complications of the liver including end stage liver disease and hepatocellular carcinoma; however, HCV is curable (Hajarizadeh, Grebely, & Dore, 2013). The therapeutic landscape of HCV

has shifted greatly from less effective, often intolerable interferon-based therapy regimens into the highly anticipated era of direct acting antivirals (DAAs). New DAAs are associated with much optimism and enthusiasm as they are accompanied by high sustained viral response (SVR) rates (>90%), fewer and less severe side effects, simpler regimen, and shorter course duration (Dore & Feld, 2015; Gogela, Lin, Wisocky, & Chung, 2015; Walker, Pendrosa, Manthena, Patel, & Marx, 2015).

The World Health Organization (WHO) has published a global health sector strategy detailing the actions needed to work towards the elimination of viral hepatitis as a public health threat by 2030 (WHO, 2016a, 2016b), but this goal will only be achieved if those people at high risk of, or living with, infection have access to hepatitis prevention, diagnosis, and treatment services. Based on

* Corresponding author at: Glasgow Caledonian University School of Health and Life Sciences, Cowcaddens Road, G4 0BA, UK.

E-mail address: heather.valerio@nhs.net (H. Valerio).

modelling studies which have illustrated the potential benefit of treating active PWID by reducing incidence through prevention of onward infections, EASL and WHO guidelines recommend the prioritization of HCV therapy among this group (Martin et al., 2011; Martin et al., 2013; EASL, 2015; WHO, 2016b). Despite these guidance, the restriction of both active and recently abstinent PWID is a persistent barrier to initiation on to HCV therapy in Europe and elsewhere (Lazarus et al., 2017; Marshall et al., 2017; Ooka, Connolly, & Kim, 2017; Barua et al., 2015). Access to treatment among those living with HCV could be further compromised if basic information about DAA treatment fails to reach PWID and other populations at high risk of infection and transmission.

Uptake of HCV-related prevention and care services among PWID, a traditionally difficult to reach population, has historically been limited due to a range of barriers operating at the patient, service provider, and system level (Paterson, Hirsch, & Andres, 2013; Bruggmann & Grebely, 2015; Bruggmann, 2012). Education of both patients and providers may help to address barriers preventing HCV care (Bruggmann, 2012; Marinho et al., 2016). Research has suggested that adequate knowledge regarding HCV treatment may be an integral precursor to increased engagement with HCV-related care and treatment uptake (Marinho et al., 2016; Treloar et al., 2011). In spite of this, data reporting the extent to which PWID are cognisant of the latest developments in HCV treatment, particularly their high cure rates, are scarce. Thus, herein, we used data from a national survey of PWID to examine knowledge of hepatitis C treatment—and the individual-level characteristics associated with that knowledge—in the interferon-free therapeutic era. This study aims to identify if there are key gaps in knowledge of DAAs among PWID in Scotland, a country like many others which has initially prioritised DAAs to those with advanced liver disease, and inform the need for further interventions to address these potential gaps (Scottish Government, 2015; Lazarus et al., 2017; Marshall et al., 2017).

Methods

Data sources

The Needle Exchange Surveillance Initiative (NESI) is a voluntary, anonymous, cross-sectional survey conducted biennially since 2008 to monitor HCV infection and related behaviours among PWID who assess injecting equipment provision (IEP) sites throughout mainland Scotland. Injection equipment provision in Scotland relates to both the distribution of needles and syringes and other injecting equipment, as described previously (NHS, 2017; Scottish Government, 2010). Clients were approached at 118 IEP sites (relating to approximately 63% of all sites across the country) from February 2015–June 2016 and invited to participate if they had ever injected drugs (NHS, 2017). Recruitment was done by trained interviewers who obtained informed consent prior to data collection. All surveyed participants were encouraged to submit a dried blood spot (DBS) sample to test anonymously for presence of HCV antibodies and RNA. Individuals who completed the survey received a £5 shopping voucher. NESI sampling and laboratory testing methods have been previously described (Allen et al., 2012). Ethical approval for the NESI survey was granted by the NHS Health Research Authority Research Ethics Committee (REC Ref: 08/S0709/46).

Outcomes

Two outcome measures – on a) awareness of HCV treatment and b) knowledge of treatment effectiveness– were generated based on questions in the NESI survey conducted during 2015–

2016, subsequent to the introduction of the first DAA therapies in Scotland in May 2014.

In relation to a), participants were asked if there is a treatment for hepatitis C; responses of *Yes* were compared to those reporting *No* or *Don't Know*. In relation to b), participants were asked “what are the chances of HCV being cured with current treatment?” with responses categorised as *Very High* (81–100%), *High* (61–80%), *Reasonable* (41–60%), *Low* (21–40%), *Very Low* (0–20%), and *Don't Know*. For our base-case analysis, we compared those responding *Very High* (81–100%) –in line with SVR rates typically observed with DAAs – to the rest.

Exposures of interest

We assessed outcomes according to relevant demographic and behavioural factors: (i) biological sex; (ii) age at survey (<35 years, 35+ years); (iii) NHS board of interview (Greater Glasgow & Clyde [GGC], outwith GGC); (iv) time since onset of injecting (<5 years, 5 + years); (v) history of recent injecting (injected >6 months previous to survey date, injected within 6 months previous to survey date); (vi) currently prescribed methadone; (vii) prisoner status (never imprisoned, imprisoned more than one year before survey date, imprisoned within one year of survey date); (viii) excessive alcohol use (<50 units per week, >50 units per week sustained for 12 months) (Brown et al., 2015); and (ix) awareness of HCV infection status and uptake of HCV testing and care (never tested, ever tested and self-reported never HCV infected, ever tested and self-reported ever HCV infected but never attended HCV specialist care, ever tested and self-reported ever HCV infected and attended appointment at HCV care). Self-reported HCV diagnosis, as opposed to serology results, was examined to assess whether individuals who have been tested, diagnosed, and engaged with services have greater awareness of HCV treatment.

Analysis

Individuals were excluded if demographic data were insufficient or missing, resulting in 2623 participants available for analysis.

Unadjusted and adjusted logistic regression was used to identify factors associated with a) HCV treatment awareness and b) the perceived effectiveness of HCV treatment as very high (defined as >80%). For our first analysis a), participants who were HCV treatment experienced were excluded. In relation to b), we restricted our population to those whose DBS test result indicated chronic infection (i.e. those eligible for antiviral therapy) in a supplementary analysis. Further, we also explored factors associated with the perceived effectiveness of HCV treatment as high (defined as >60%) in a sensitivity analysis.

All analyses were completed using Stata v.13.0 (StataCorp, College Station, TX, USA).

Results

Participant characteristics

Among the 2623 participants, the mean age at survey date was 38.2 years (standard deviation \pm 7.1 years; range 18.8–71.7 years) and 71% were male. Eighty-six percent had been injecting drugs for five or more years (median time injecting 14.3 years, IQR: 8.6–19.9 years) and the majority had injected within the 6 months previous to the survey date (82%). Of all participants, the vast majority (92%) had ever been tested for HCV, 40% reported they had ever been diagnosed (44% of those ever tested), and 9% had a history of HCV treatment (relating to 21% of those who self-reported as having previously tested positive for HCV).

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